

Amendments to the Drawings:

The drawing sheet attached in connection with the above-identified application containing Figure 1 is being presented as a new formal drawing sheet to be substituted for the previously submitted drawing sheet. The drawing Figure 1 has been amended. Appended to this amendment is an annotated copy of the previous drawing sheet which has been marked to show changes presented in the replacement sheet of the drawing.

The specific changes which have been made to Figure 1 are to include the ECU 61 along with its inputs from elements 13, 17, 72, 73, and 74, and its outputs to elements 17, 18, 21, 42 and 51.

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 3 is requested to be cancelled without prejudice or disclaimer.

Claims 1 and 13-15 are currently being amended.

This amendment changes and deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-2 and 4-15 are now pending in this application.

Drawings

The drawings were objected to. The specification has been amended to refer to the steps S1007 and S1008, and with respect to Figures 55A-55C, to add reference character "B" and to change reference character 333 to 332. The specification has also been amended on page 12 to change step "S1" to step "S102". With respect to reference character "331", applicant notes that this reference character is mentioned on page 38, line 28. Accordingly, applicants submit that the objection to the drawings has been overcome. Figure 1 has also been amended to include the ECU 61 along with its inputs from elements 13, 17, 72, 73, and 74, and its outputs to elements 17, 18, 21, 42 and 51.

Specification

The disclosure was objected to for informalities. The specification has been amended as suggested in the Office Action, and Figure 1 has been amended to include the ECU 61 along with its corresponding inputs and outputs. Accordingly, applicant submits that the objection to the specification has been overcome.

Claim objections

Claims 14 and 15 were objected to for informalities. Claim 14 has been amended as suggested in the Office Action. With respect to the objection to claim 15, applicant respectfully traverses because the phrase “the exhaust gas purifying means being disposed in an exhaust passage” in that claim is clear without inserting “for” between “means” and “being”. Moreover, the term “being disposed” in claim 15 after “means” refers to the arrangement of the exhaust gas purifying means, not the function of the “means”. The function of the “means” is for removing specific content, not for being disposed. Applicant submits that the objection to claims 14 and 15 have been overcome.

Rejections under 35 U.S.C. §§ 102 and 103

Claims 1-4, 6-11 and 13-15 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication 2004/0016227 A1 to Kitahara (“Kitahara”). Claims 5 and 9-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitahara in view of U.S. Patent 6,568,177 to Surnilla (“Surnilla”). Applicant respectfully traverses these rejections for at least the following reasons.

Independent claim 1, as amended, is directed to an exhaust gas purifying system for an internal combustion engine, and recites “to determine a second engine controlled variable relating to a combustion period, at a value different from a value employed during normal processing, when the recovery processing is executed, wherein the second engine controlled variable includes one of a main injection timing, a pilot injection quantity and a pilot injection timing.” Thus in claim 1, when the recovery processing is executed, a second engine controlled variable is determined, where the second engine controlled variable relates to a combustion period at a value different from a value employed during normal processing, wherein the second engine controlled variable includes one of a main injection timing, a pilot injection quantity and a pilot injection timing. Kitahara and Surnilla fail to suggest at least this feature of claim 1, or the advantages attendant thereto.

With respect to the second engine controlled variable including one of a main injection timing, a pilot injection quantity and a pilot injection timing (which was incorporated from original claim 3), the Office Action on page 4 cites to paragraph 28 of Kitahara. The cited section of Kitahara, however, merely discloses a control unit 20 that

outputs a fuel injection command to a fuel injector 9 for controlling a fuel injection quantity for a main injection and a pilot injection. Significantly, Kitahara does not disclose controlling the injection timing for the main injection or pilot injection to have a different value than normal processing for recovering an exhaust gas purifying device. Instead, Kitahara merely discloses that a rich spike treatment is executed for catalyst regeneration (see paragraph [0060], for example). Thus, Kitahara fails to suggest as recited in claim 1, that when a recovery processing (for the exhaust gas purifying device) is executed, a second engine controlled variable is determined, where the second engine controlled variable relates to a combustion period at a value different from a value employed during normal processing, wherein the second engine controlled variable includes one of a main injection timing, a pilot injection quantity and a pilot injection timing.

Moreover, the control of claim 1 allows that even if an engine operation condition is changed due to vehicle acceleration, or a traveling circumstance of the vehicle is changed, the excess air ratio is maintained constant (see specification, paragraphs [0176] and [0180]). By contrast, Kitahara fails to realize setting a control variable when recovery processing is executed, where the control variable is one of a main injection timing, a pilot injection quantity and a pilot injection timing, for the purpose of maintaining an excess air ratio.

Surnilla was cited for allegedly disclosing other features of the claims, but fails to cure the deficiencies of Kitahara.

Independent claims 13, 14 and 15, respectively recite “wherein the controlling the combustion period comprises setting an engine controlled variable relating to the combustion period, and the engine controlled variable includes one of a main injection timing, a pilot injection quantity and a pilot injection timing”, “setting a second engine controlled variable relating to a combustion period, at a value different from a value employed during normal processing, when the recovery processing is executed, wherein the second engine controlled variable includes one of a main injection timing, a pilot injection quantity and a pilot injection timing” and “second engine controlled variable setting means for setting a second engine controlled variable relating to a combustion period, at a value different from a value employed during normal processing, when the recovery processing is executed, the second

engine controlled variable including at least one of a main injection timing, a pilot injection quantity and a pilot injection timing” and are patentable for reasons analogous to claim 1.

The dependent claims ultimately depend from claim 1, and are patentable for at least the same reasons, as well as for further patentable features recited therein.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date March 7, 2006

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Annotated Drawing Sheets
 Title: EXHAUST GAS PURIFYING SYSTEM
 FOR INTERNAL COMBUSTION ENGINE
 Inventor(s): Takashi SHIRAKAWA
 Appl. No.: 10/823,721

FIG.1

